

ATTORNEY CLIENT PRIVILEGE
Information Briefing

- The lower Willamette River has served a significant role in the development and prosperity of Portland as well as the larger region served by both the Willamette and Columbia Rivers. Important manufacturing, shipping, shipbuilding and timber processing have been conducted along the banks of the river. Historically, industry was located adjacent to rivers like the Willamette—for ease of shipping as well as a convenient way to get rid of waste materials. The lower Willamette River has served the community, but it has also been the dump site for historic operations.
- EPA, along with many stakeholders, including Tribal representatives, the Lower Willamette Group, the state of Oregon, members of the community, and federal partners have been investigating the lower Willamette River (Portland Harbor) and are currently evaluating cleanup alternatives to address contamination.
- Numerous contaminants at levels presenting unacceptable risk were identified during sampling and investigations throughout Portland Harbor. Some areas are more contaminated than others, particularly in nearshore areas. High concentrations of PCBs and dioxins/furans are found in many locations throughout Portland Harbor, while high concentrations of PAHs, and breakdown products of DDT are found in fewer portions of the site. Generally, concentrations in subsurface sediments are even higher than those measured in surface sediments.
- Much of the site is erosional or transitional (deposition during some years or parts of a given year and erosional during others) meaning the contaminants get resuspended and distributed in the river sediments, therefore, natural recovery is not projected to be effective without some active remediation to remove higher level contamination.
- Contaminated sediments are impacting the water column through various transport processes and are being transported downstream.
- At some locations in the river, nearly pure chemical product is releasing out of the sediments in the form of a nonaqueous phase liquid.
- The contaminants within the river exceed Preliminary Remediation Goals and pose a risk to people and the environment. For example, people can be exposed to contamination by direct contact with contaminated sediments or by eating contaminated fish. Sampling of fish has revealed that for some species, the level of contaminants in the tissue is so high, the fish should not be eaten. Risks at the site are highest for fish consumers and, in particular, nursing infants of mothers who regularly eat fish from the Willamette River. Adverse health effects to the infant include neurological and motor-control problems as well as lower IQ and poor short-term memory. The contaminants with the most risk found in fish are a result of bioaccumulation of contaminant laden sediments.
- Studies commissioned by the LWG and the Portland Harbor Partnership document that people do eat fish from the Willamette for recreation, subsistence and livelihood.
- Wildlife, fish and sediment dwelling organisms are also impacted by contamination in sediments. Invertebrates such as insects, worms, clams and crayfish, amphibians and reptiles, over 40 species of fish, and numerous bird and mammal species are dependent on the river for their food and habitations. All organisms present at the site make an important contribution to the ecological function of the river. Unfortunately the same

contaminants that pose a risk to people also are a risk to the survival, reproduction and growth of the other life along the River.

- Technologies to address contaminated sediment include dredging, capping, enhanced monitored natural recovery, monitored natural recovery, in-situ treatment and institutional controls.
- EPA is modifying the FS provided by the LWG.
 - One example of a modification being made is to include areas for cleanup that were not in the original FS, such as at Swan Island Lagoon. The LWG FS used this area for contaminant disposal for several alternatives and whether or not it is ultimately used for this purpose. EPA chose to include other cleanup options for this area in all alternatives in the modified FS.
 - Another modification EPA is making is to extend cleanup alternatives to include sediments contaminated with total PAHs, dioxins/furans and DDT pesticide (and its breakdown products DDE and DDD), because they had not been fully included in the draft LWG FS alternatives.
 - The LWG draft FS also didn't identify any Principal Threat Waste within the study area and EPA has determined that there is PTW—in the form of the nonaqueous liquid or product that is seeping into the river at some locations as well as highly contaminated sediments. Since there is PTW at the site, EPA needs to determine whether it can be reliably contained (eg. to prevent recontamination of a containment cap) and EPA has preliminarily determined that it is not possible to reliably contain the nonaqueous liquid and dissolved phase contaminants—so EPA's modified FS will identify much of the PTW for removal and disposal.
 - The EPA alternatives also address contaminated groundwater that is seeping into the river.
- When developing the alternatives, EPA evaluated the current and potential future river use, hydrodynamics and other environmental conditions, as well as contaminant concentrations when assigning cleanup technologies to areas within the study area.
- The Willamette river watershed is large and over time, it is projected that cleaner sediments will deposit and mix on top of existing sediment contamination. Because there is a source of cleaner sediments coming into the site, it is reasonable to rely on natural processes of sedimentation and mixing to address most of the contaminated areas of the river.
- In those locations where contaminant concentrations are extremely high or due to hydrodynamics or river use, and it is not possible to rely on natural recovery processes, EPA will be looking to more aggressive options, like dredging, capping and in-situ treatment. Capping is not being considered in the navigation channel since those areas will be dredged in the future. Additionally, EPA will need to understand the current and anticipated use of the nearshore areas to minimize restrictions on future marine related uses and navigation—such as future maintenance dredging, anchoring or deepening to accommodate larger draft ships, and also assure that cap integrity can be maintained.
- It is important to understand that natural processes are believed to be a viable option to clean up much of the river throughout the site. Even in areas that are slated for dredging, there will be an intermediate contaminant level that will be identified for active cleanup

after which natural processes would be used to reach the final cleanup levels (PRGs). For each alternative, there is a different Remedial Action Level (RAL) and the RALs typically get lower as the alternatives get more aggressive.

- The RAL is not the cleanup level, but rather a trigger for active cleanup measures, so all alternatives will also rely heavily on natural processes to get the river sediment down to the cleanup level, and that will take time. Time to achieve cleanup goals is another factor EPA will consider when evaluating each cleanup alternative.
- Why is cleanup important? The most significant risk to people is from consuming PCB-contaminated fish. Resident fish, such as smallmouth bass, carp, brown bullhead, and black crappie live their entire lives within the Willamette river and accumulate more contamination than salmon or other migratory fish, who only spend a portion of their life within the Willamette. Because of this, levels of contamination within resident fish are elevated and at current levels of PCBs in some parts of the river, people should not consume resident fish. When cleanup is complete and after a period of natural recovery, people will be able to eat more resident fish from the river; cleanup will also benefit migratory fish. Cleanup is important to assist in returning the river as viable habitat for wildlife as well as providing safe places for people to access and enjoy the water. The cleanup will also address the other contaminants that pose a risk to people and the environment and overall, the health of the river will greatly improve.
- See Figures of Alternatives B-G
- See Table showing how LWG and EPA alternatives compare
- Evaluation criteria—Section 4 includes a discussion of the nine criteria:
 - Protective of Human Health and the Environment
 - Compliance with Applicable or Relevant and Appropriate Requirements
 - Implementability
 - Reduction in Toxicity, Mobility and Volume
 - Short term effectiveness
 - Long term effectiveness
 - Cost
 - State/Tribal Input
 - Public Input
- Of these criteria, EPA must select a final remedy that achieves the first two—the remedy must be protective of human health and the environment and it must comply with all ARARs. Once the suite of alternatives is developed that meet those first two, EPA will evaluate the balance or trade-offs of five other criteria. At this stage of the FS process, we will not have full input from the State/Tribes or the public, which are modifying criteria, so those criteria will be evaluated after public comment is taken on our preferred alternative and prior to selecting the final remedy in the ROD. During the balancing analysis, EPA will weigh the following: relative time to achieve cleanup levels, the certainty of achieving cleanup levels, permanence of the remedy, cost, how compatible the remedy will be with future land use (or conversely, the restrictions placed on future land use).
- When evaluating the criteria for each alternative, EPA will rely on the data and good science, considering the appropriateness of any given technology for each area of the river.

- What does the community think? The lower Willamette River is highly valued as wildlife habitat, a recreation and entertainment hub, a natural and cultural landmark of the region, and a symbol of the abundant nature of the region. The communities of the region have emphasized the river's importance for fishing and the lower Willamette River is an important subsistence fishery for many minority communities. Cleanup alternatives are being evaluated so that the river can provide the region a viable industrial corridor and a safe place to fish and swim.
- The river is an incredible resource that we all share. It's a priority for EPA to ensure that diverse communities have a seat at the table and that we continue to hear the voices of concerned citizens throughout the entire cleanup process. Additionally, it's not only a priority that the community has access to information EPA will use to make decisions, but that the information is presented in a format the community finds useful, and that there are opportunities for open dialogue to discuss their values and concerns related to cleanup.
- To facilitate community conversations, EPA continues to meet monthly with CAG members, host Superfund/Portland Harbor multi-lingual workshops, and host Community networking cafés. Some of the top community values/priorities that we've heard for the cleanup include:
 - Ensure cleanup plan considers keeping in place or expanding river access points such as docks, walkways, greenway;
 - Ensure a robust cleanup weighted heavily on removal rather than capping or MNR;
 - Consideration safe transportation routes for haul trucks, low emission vehicles, and alternative transportation methods to lower air toxics and greenhouse gas emissions
 - Considerations of where contaminated sediment is placed (CDF);
 - Considerations to protect fish and wildlife during cleanup & habitat improvement/restoration;
 - Considerations to protect people during cleanup such as air monitoring;
 - Concern about being able to use the river and eat fish;
 - Ensure contractors adhere to and properly install remedies, and not cause harm to environment during cleanup;
 - Ensure cleanup remedy can withstand significant natural disasters such as earthquakes, and consideration of climate change impacts such as more frequent or larger floods;
 - Considerations to keep businesses operational along river during cleanup.
 - Residents in the Portland not only want to voice input about how cleanup should be done, want to ensure local community members are hired for the jobs that will be created when cleanup begins.